Magazine *and* Feature Section

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Steam and Hydraulickers Coax Millions From Klondike Valleys

BY
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Modern Machine Methods Change Scenery, Turning Land Upside Down; Hot Pipes Now Forced Into Frozen Grave Ito Move Its Precious Contents to Sluices.

DAWSON, YUKON TERRITORY, July 22.—You have all heard of the Klondike, the treasure of cave of Jack Frost in this faraway land of the north, where gold dust and gravel and bowlders are cemented together by perpetual ice. You know of the thousands who rushed here a few years back loaded with gold. You may have heard how the district has produced gold by the ton, and how within ten years after its discovery the output footed up more than $100,000,000. That was the Klondike of the past. I write of the Klondike of today.

Big Companies Handle Millions.

The first gold came from large pockets. The icy earth was thawed down to bed rock with wood fires, and the yellow grains dragged forth with pick and shovel and the sweat of man's brow. It took rich dirt to pay for the labor, and when the cream had been skimmed the individual miners left almost in a body. Then the new Klondike began, which continues in the Klondike of today. Companies with millions of capital brought in the latest of mining machinery. They thawed the ice with steam points, and forced electricity to dredge the gold bearing gravel from the depths of the earth and wash it to get out the gold. They turned the course of rivers and carried them in pipes over the mountains to wash down the hills. They handled millions of tons of material, but each ton has yielded a few grains of pure gold, and altogether they have produced almost as much wealth as came forth in the first 10 years by the work of the individual miners.

Dredgers Turn Valley Upside Down.

The mining of the present is more destructive than that of the past. The fires of Sodom and Gomorrah left paths no more marked than the tracks of the dredges and the hydraulic giants. They have walked over some of the most beautiful parts of the world, and left them the abomination of desolation.

Twenty years ago there was no more beautiful valley on earth than that of the Klondike. It was bordered by grass covered hills that rolled over one another, rising here and there to far above the height of the Blue Ridge. Both hills and valleys were covered with woods. In the open spaces the grass reached to your knees or your waist, and there were wild flowers everywhere. As soon as gold was discovered men began to chop down the trees. Lumber was worth $100 and upward a thousand, and little pine logs brought $3 each. The miners thawed their way down into the gravel, and defaced the landscape with piles of half frozen muck. A little later the dredgers came in, and turned the land upside down. They stripped off the surface of grass and stumps, and plowed the beds of the creeks in great furrows thirty feet deep, until they are now as bare and as dreary as any part of the Sahara. The two corporations which have done most of this work are the Yukon Gold Company, commonly known as the Guggenheims, and Joseph W. Boyle, Ltd., or the Mining Company of these is a great gold manufacturing proposition, which is different from any other in the mining camps of the world. In this letter I shall treat of the Yukon Gold only.

Hydraulickers Change Scenery.

But let me give you some pictures of the Klondike of today. I took a ride up the valley with Chester A. Thomas, the resident manager of the Yukon Gold company. We had a high powered automobile, and flew up the Klondike valley winding our way in and out through great piles of debris. We rode along Bonanza and Eldorado creeks which have been dredged from one end to the other and along the sides of mountains where they are now sluicing down the bed of the famous White river channel. The whole way was through a mass of gravel, rock and earth washing. The beds of the river and creeks have been plowed in great furrows many feet high. There are places where miles of bowlders pebbles and broken rock seems to flow in a mighty stream like that of a glacier down the mountains that arise from the valley. Streams of water as big around as the thigh of a man are shooting out of pipes with such a force that they hit the icy gravel at 100 pounds to the inch, and that notwithstanding it is several hundreds feet from the pipe mouth to the hill. In other places the water drops from the top of the mountain, washing down the ice melting earth, the whole giving one the impression that a mighty cloudburst has torn down the hills, and that avalanches of earth slides have filled up the valleys.

Pinches of Gold Profitable.

The excavation that has been done in the Klondike has been surpassed only by that of our great canal at Panama. The work is still going on. The Guggenheims have, on the famous gold creeks, nine dredges which are tearing nature to bits to get out the 60 cents' worth of gold still locked up in each ton of their rock and sand. They have a dozen hydraulic giants which are melting and gouging the hills to save the 10 or 20 cents of gold in each wagon load of the old White river channel. At Juneau I saw them handling ore worth $1.50 to the ton, and it seemed wonderful that it could be done at a profit. Here they are taking out 20 cents' worth of gold to the ton, and the cost is so low that it pays. The amount of gold dust in each ton is as small as the pinch of snuff which your grandmother drew up her nose, and it is evenly mixed through as much sand as two horses can haul on a wagon. Still they can sluice down the sand so that every atom of that pinch of gold dust is saved.

Ice Cap 300 Feet Thick.

I despair of making you appreciate the difficulties of mining in this icy land of the north. The winters are so cold that the Yukon Gold company cannot work its machinery for more than seven months of the year. The most of the profits are made in the open season of 170 days, and then the work is shut down until next summer. In addition to the ice of the present is that of the far distant past. In other placer mining regions the earth and rock are free from frost. The gold is sprinkled through them and you have only to dig and wash to get the gold out. Here the whole country, with the exception of a foot or so at the surface, is one mass of ice mixed with boulders, pebbles and sand that has been perpetually frozen for thousands of years. Its condition dates back to the ice age of the prehistoric past. The ice goes down to no one knows where. They have sunk diamond drills in some places to a depth of 300 feet and found the earth frozen solid all the way through. The gravel is bedded in the ice, and the ice, sand and earth remain as hard as stone, no matter how hot the summer. The conglomerate or frozen mixture is covered by a thin bed of muck, on the top of which grows a layer of arctic moss, the two forming an insulator that preserves the frozen conditions beneath. It is only when the moss and muck are stripped off that the hot summer sun makes any impression on the glacial ice cap below.

Gold Is at Bedrock.

It is sprinkled through this ice, earth and rock that the gold values lie. There is a little not far from the surface, but the most of the gold is at bedrock, which may be thirty, forty or fifty feet down. The frozen earth has to be thawed out, inch by inch, and foot by foot, in such a way that it can be swallowed by the dredges that gulp it down at the rate of twenty-six bites to the minute and about one-third of a ton to the bite. They take up the stuff in great buckets which run on an endless chain and throw it into revolving screens. These screens roll the rocks over and over and sift out the gold bearing sand. They take away the pebbles and great boulders and turn the sand out upon plates covered with mercury which catches the gold. The dredges will handle something like 5,000,000 tons of material this year and the amount of gold saved will be several millions of dollars.

Must Thaw for Dredging.

Before any such work can be done Jack Frost must be taken out of the ground to be mined. The dredges cannot work in frozen rock, and the difficulties of the ice strata are far greater for them than they were for the individual miners. In the first mining of the Klondike the perpetual ice really aided the men by saving the trouble of timbering. They could dig down through it to where the great gold pockets lay, and then drift off along the bed rock, thawing only the strata that contained the most of the gold. The frozen earth was as firm as so much solid rock and they were able to work without the wooden supports necessary to hold up the roofs of the mines of other parts of the world.

The dredges have to have all the earth free from frost. The region they work must be thawed down to forty or fifty feet from the surface, and that in great blocks as big as a house, before the excavation can even begin.

Steam Pipes Forced Down.

The methods of thawing the earth have been reduced to a science. The first miners used wood fires, which they kept burning until they had thawed a shaft down to the gold. Other fires were then built along the bed rock and the earth taken out until they had made great caverns and tunnels far down under the 30 or 40 feet of ice overhead. They used hot stones to aid in the thawing and took out the melted material in wheelbarrows and carried it in buckets to the surface by windlasses like an old fashioned well sweep.

The thawing of today is done by steam generated in great boilers on the top of the ground. The setam is carried through pipes to where needed, and forced into the earth through steel tubes three-forths of an inch in diameter, and from 10 to 30 feet long. These tubes are really galvanized iron pipe about as big around as my thumb, and stood upon end, the longest would reach to the roof of a three or four story house. Each tube has a hard metal cap or steel head on the top, and below this an opening where the connection with the main steam pipe is made. The bottom of the tube is pointed and the steel there is so strong that the tube can be driven down into the earth.

The driving is done with the tube standing upright on the ground. It is usually inside a derrick which is often as tall as that of an oil well. A man stands on the derrick holding a sledge hammer weighing twelve pounds, and with this he drives the steam carrying pipe, inch by inch through the earth. The steam melts the ice as it goes down and a second man stands at the bottom and twists the pipe this way and that to aid in the work. After a long time bed rock is reached and the tube is left there for two or three days oozing forth steam.

Like Quills on Porcupine.

The tubes are so sunk that each softens the frozen earth for a radius of three or more feet around it, and these circles of melting six feet in diameter some together, making the whole of the ground so that it can be worked by the dredges. Hundreds of such pipes have to be sunk and all are connected by other pipes with the steam forcing plant. In places the pipes are so thick that they stand out on the back of old Mother Earth like the quills on a porcupine. They soften the earth so that it is dangerous to walk over it until it has cooled. The ground may seem solid, when all at once a man may drop to his knees or his waist in scalding hot mud. The work of thawing is done by skilled men, some of whom receive from $7 to $10 a day.

Sluce Down Icy Sand.

Leaving the dredging I rode along the sides of the mountains where they were sluicing down the icy sand to get out the gold. Here the sun and the water alone do the thawing. After the earth is stripped off the sun's rays can make their way into the strata of ice to such an extent that in one summer they will penetrate to a distance of from six to ten feet. The water dashing against the half frozen earth adds to the thawing, and the sand and bowlders roll down in great streams. The amount sluiced away is inconceivable. There are parts of these valleys that are half filled with great sheets of white tailings. They spread out like so many glaciers, leaving here and there great caves in the hills.

The earth thus washed down is the color of pipe clay. Some of it looks like Portland cement as it lies in the barrel. The sand is white quartz, and the bowlders and pebbles are almost like slacked lime in color. The gold is scattered throughout this material, the most of it lying at the bottom. The sluicing tears down the hills, leaving gigantic formations, which in some places are like forts or great castles. I saw one such as big as a business block of twenty stories; it covered a half square of ground. Its walls were perpendicular and at the top were spires like those of a church. It was almost snow white and in the distance looked not unlike marble.

White River Antedates History.

The whiteness of the silt and gravel is a characteristic of the bed of the famous White river channel, which flowed through this region in prehistoric times at an altitude several hundred feet above the present beds of the creeks. The streams of later ages have cut their way down through the old river bottom, and are now running through valleys far below. It is in what is left of the banks of the old White river bed that the low grade gold dust washed out by hydraulics is found. The old river probably carried all the gold now found in the creeks far below and they are now sluicing down its former banks to get the gold dust remaining. How long ago the old river flowed no one knows. The miners have discovered fossils of tropical plants, showing that it antedated the glacial period, and they wash out now and then the remains of mastodons and other prehistoric animals which until now have been locked up in the perpetual ice.

Riffles Catch the Gold.

In getting the gold the water washes the sand and gravel down the sluice boxes filled with steel riffles bedded in mercury. As the stuff runs over the riffles the quicksilver catches the gold, and the rock and sand only go on to the tailings below. Some of the gold sinks into the pile at the foot of the sluicing and does not get into the boxes until the clean up of the fall, when a quarter of a million dollars may be found in the gravel and sand at the foot of the cliff. Something like 2,000,000 cubic yards of earth is handled this way by the hydraulic giants each year, and this brings out gold to the amount of over $600,000. The average gold contents of the gravel is in the neighborhood of 20 cents per cubic yard, and of this one-half is said to be profit.

Lose Only Trifle to Ton.

As we rode up the valleys I asked Mr. Thomas whether they were able to win all the gold. He replied:

"We may lose a cent or two to the ton, but the amount is so small that we are unable to tell just what it is. The stuff that goes through the dredges may at times yield 60 cents a yard, and there may be patches that will run $5 per yard or more. We work only in large quantities and we know what our averages are."

I asked as to the amount of material handled, and was told that within the last eight years more than 40,000,000 cubic yards of earth and rock had been washed by the dredges and the hydraulic giants, the output being about 5,000,000 cubic yards for each year. I then took my paper and figured. A cubic yard of this rock weighs about a ton and a half. It would be a good load for two horses. Let us suppose it could be put upon wagons and each team with its wagon take 20 feet space on the roadway. The teams required to haul the whole mass would be 1,200,000,000 feet long or, for easy figuring, at 5,000 feet to the mile it would reach from here for a distance of 250,000 miles. It would be long enough to go 10 times around the world at the equator, and if it could be started through space on a roadway of moonbeams it would extend all the way to that luminous body that makes our nights glorious and still leave 10,000 miles of wagons to follow.

Extract More Than $155,000,000.

Up to the present time more than $155,000,000 worth of gold has been taken out of the Klondike, and of that vast sum more than two-fifths has come from mining the low grade earth with modern machinery. Mr. Thomas tells me that when he first came here to look into the country as a low grade proposition for the Guggenheim syndicate the crowd of fortune hunters had left and the few still at work were barely making day wages. They were scattered up and down the valley, and the Yukon Gold company could have then bought the right to the whole of the Klondike for a very small sum. It confined its purchases only to the richest of the gold bearing creeks. It was then thought that dredges could not handle the heavy quartz bowlders found among the gravel, and, at first, stationary machines, consisting of ladders with endless buckets, were employed to dig up the earth and get out the gold. Later the dredges were found to work well, and after a time was evolved the strong dredge type that is now used here today.

Old Miners Threw Away Low Grades.

The old miners threw away the values that are now being saved. Their way of testing the gold in a pan was by guess, and that after the earth had been washed off. One day Mr. Thomas showed an old miner a pan which he had just finished washing, and asked him what he thought it would run. The pan contained a few grains of gold dust and quite a little flour gold. The miner tilted the pan so that the grains ran to one side, and then took his thumb and scraped out the flour and threw it away. The stuff he threw out was just what Mr. Thomas was trying to save, and upon which all his calculations were based. Still the miner thought it worth nothing.

It has been in such nothings that the Yukon Gold company has invested capital to the amount of $17,000,000. It has dredging operations in Alaska and in other parts of the world. Right here in the Klondike up to two years ago it had taken out millions and paid to its stockholders $6,000,000 or $7,000,000 in dividends. The profits of the plant here last year were more than $1,000,000.

"The Day of the Girl"

"The Camp-Fire Girl"

By NELL BRINKLEY

SHE tramps the pine woods and the hills in knickerbockers and middy-shirt; her waist free of corseting and her limbs of skirts; her pack on her shoulder; and never missing man! Somewhere in the dim woods she buries Trouble in a hollow tree and snatches Laughter from the dancing star of a stream in the sun, and a wild rose for her cheeks from under a mossy log. Sing the day of the girl when she can go straight to the heart of things with a body both modest and unconscious.

NELL BRINKLEY.

Here's a Charming Garden Frock

By LA RACONTEUSE.

A CHARMING garden frock in ecru net top lace, the spirit of which is a three tier effect, each finished with a frill of flesh colored ribbon, is shown here. Cordings covered with flesh colored satin are a distinctive feature. The waistline is quite snug, the princess line being attained by the arrangement of cream Venice lace.

A Romance of Life in a Big City

A GIRL AND A MAN

By VIRGINIA TERHUNE VAN DE WATER.

Agnes Learns About the Office From One of Her Coworkers.

(Copyright 1916 Star Company)

CHAPTER VI.

THUS began Alice Morley's first work with the firm of Hale & Bainbridge.

After the brief conversation when she entered his employ William Hale spoke no word but of the business of the day to his new stenographer and secretary. He had put her immediately in her place. She was to be, as she had expected, merely a sort of machine in his office.

She was too busy throughout the morning to reflect on this matter, for she needed all her wits to perform her task well. She was so nervous at first that her hands and feet were like ice. Then, as her new employer dictated one letter after another, her pulse became calm and her hands resumed their normal temperature.

The very realization that she was but an animate apparatus for his convenience steadied her. She was glad that he knew nothing of her personality. It was very much easier just as it was.

At 1 o'clock Mr. Hale drew a long breath, as if of weariness.

"There" he said. "That's enough for the present. You may go on out to luncheon. Be back by a quarter of two. I want to sign my letters before I leave the office at five."

"Very well, sir," she heard herself saying.

The closet in which she had hung her hat and coat was in the large outer room. When she left Mr. Hale's private office she noticed a door to the right of it. It bore the name of "Hasbrook Bainbridge," followed by the word "Private." The same word was on Mr. Hale's own office door.

This room then was occupied by the junior member of the firm.

Glancing quickly about the other room, rafted off in various spaces, she noticed that the stout man whom she had seen here this morning was not present. His stenographer also was nowhere to be seen. But the young girl who had been seated at a typewriter earlier in the day was just now covering her machine preparatory to going out. She nodded kindly to Agnes as she met her eye.

An Introduction.

"How do you do?" she said. "I'm Miss Rooney—one of the typists here. I guess you're Mr. Hale's new secretary—aren't you?"

"Yes," Agnes replied. "I am Agnes Morley, the new secretary."

"I'm pleased to meet you," the other said. "Since you're giving me your first name, I suppose I may as well give you mine. It's Annie—but I sort of hate to tell it to strangers—for all of them laugh at it."

"I don't see why," Agnes said. "I'm sure Annie's a very nice name."

"Oh, it's on account of that old song, 'Annie Rooney,' that they laugh," Annie explained.

"I never thought of that," Agnes smiled.

She looked at her companion intently, for she saw that the girl wanted to be friendly. It was a pity, she thought, that any one who might have been somewhat attractive should dress as Annie Rooney did.

Her plump figure was compressed into a very tight dress, her hair was piled on top of her head in an exaggeration of the prevailing mode, and her face, especially her nose, was abundantly powdered.

Agnes remembered having heard some one say that nowadays the noses of a certain class of girls looked like marshmallows. She wondered why any creature should spoil a pleasant face and torture really pretty black hair as this girl was doing.

"Where are you going to luncheon?" her new acquaintance asked her.

"I don't know. I hadn't planned about it," Agnes replied.

"Well, there's quite a good place near here where you can get a quick feed cheap," Miss Rooney informed her. "Come along with me, and I'll show you."

The pair chatted pleasantly as they went down the street to a lunch room which bore in great white letters on its plate glass window the information that it was "A Select Restaurant for Ladies and Gents."

"I am not a bit hungry," Agnes observed as the pair seated themselves at one of the marble-topped tables dotting the huge room. At the other end of their table were two men, probably clerks from the neighborhood, so intent on shoveling their food by the means of knives into their mouths that they were entirely oblivious to anybody else who was sitting near them.

An Explanation.

"You're not hungry because you're new to your job," Miss Rooney remarked wisely. "When you've been at it awhile you'll get over being nervous and will just stoke up like the rest of us. What are you going to have now?"

"A bun and a glass of milk," Agnes replied.

"Well, I want some coffee, sinkers and a slice of apple pie," Miss Rooney said. "I want something that will stick to my ribs. You can't work long on the kind of flub-dub that you take."

Agnes laughed. "I'll try to, anyhow," she rejoined.

"You've got a nice boss in many ways," Annie informed her later as they were hurrying back to the office. "Mr. Hale's awfully businesslike and expects good, hard work, but he's just and fair all the same. Mr. Bainbridge isn't. I'm glad I'm not his secretary, but only a plain stenographer and typewriter, with no business knowledge that makes me have to do very much for him. Gee, he can be ugly."

"Is he cross to his secretary?" Agnes asked.

"I guess he knows she wouldn't stand for it," Annie giggled. "She's awfully competent, but stands on her rights. He knows if he jaws her she'll give back as good as she gets. She's not young and not good looking, but she knows a lot."

As they entered the outer office the stout man whom Agnes had seen in the morning came out through the door bearing the name of "Hasbrook Bainbridge." Miss Rooney pinched her companion's arm. "There," she whispered, "that's him—Mr. Bainbridge—that stout chap."

"Oh," breathed Agnes, "is that Mr. Bainbridge?"

Of course, then, it had not been this man whose comment she had overheard on her arrival today. It must have been one of the office boys who had given vent to that impertinent expression of admiration.

(To Be Continued.)

Regina McKenna, chancellor of the exchequer in Great Britain, rowed bow in the Cambridge eight which beat Oxford in 1887.